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ALFONS EIZENHOEFER

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12/07/2005

AGERE

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EXAMINER

THANGAVELU, KANDASAMY

ART UNIT

PAPER NUMBER

2123

DATE MAILED: 12/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/356,260

Applicant(s)

EIZENHOEFER ET AL.

Examiner

Kandasamy Thangavelu

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Introduction

1. This communication is in response to the Applicants' Amendment mailed on October 5, 2005. Claims 20, 29, 31-33, 34 and 36-38 of the application were amended. Claims 20-38 of the application are pending. This office action is made final.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. §112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 32-38 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

3.1 Claim 32 states in part, "the communication device comprising:

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- a. partitioning means adapted to partition the second type of control information into a number of sections corresponding to a number of a plurality of consecutive of frames in the multi-frame;
- b. transmitter means adapted to transmit with each of the plurality of frames of the multi-frame:
 - i. the first type of control information for the respective frame; and
 - ii. a section of the second type of control information”.

This is in contrast to what the specification describes in Page 4, Lines 23-30 and it is new information introduced by the Applicant in the amendment of September 28, 2004. The specification states that “the speech coded data from step 101 is channel coded together with at least one additional bit derived from a multi-frame signaling step 102.... The additional bit from step 102 is a part of the three bit information used for coding additional signaling information. ... In this example, it takes three frames within a multi-frame of six frames, as e.g. defined and used according to the GSM standard, to transmit the coding mode information as within each frame only one of three bits is transmitted”.

Therefore, “partitioning means adapted to partition the second type of control information *into a number of sections corresponding to a number of a plurality of consecutive of frames in the multi-frame* and transmitter means adapted to transmit with *each of the plurality of frames of the multi-frame* a section of the second type of control information” is not supported by the specification.

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3.2 Claim 33 states in part, “wherein *each frame of a plurality of consecutive frames in the multi-frame transmission communication system is transmitted with* the first type of control information for the respective frame and *a section of a partitioned second type of control information*”.

This “each frame is transmitted with a section of a partitioned second type of control information” is not supported by the specification, as described in Paragraph 3.1 above.

3.3 Claim 34 states in part, “the communication device comprising:

a first device having a partitioning means adapted to partition the code word of the second type of control information into a number of sections, and transmitter means adapted to transmit with each frame of the sequence of consecutive frames in the multi-frame, the first type of control information for the respective frame and a section of the second type of control information wherein each section is placed in a separate frame in a sequence of consecutive frames, the number of sections corresponding to the number of frames in the sequence of frames”.

The “transmitter means adapted to transmit *with each frame of the sequence of consecutive frames in the multi-frame*, the first type of control information for the respective frame and *a section of the second type of control information* wherein each section is placed in a separate frame in a sequence of consecutive frames, *the number of sections corresponding to the number of frames in the sequence of frames*” is not supported by the specification, as described in Paragraph 3.1 above.

Claims rejected but not specifically addressed are rejected based on their dependency on rejected claims.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

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the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 20-22, 25, 29 and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Roberts et al.** (US Patent 6,418,558), in view of **Paneth et al.** (US Patent 6,014,374).

6.1 **Roberts et al.** teaches hybrid fiber/coax video and telephony communication.

Specifically, as per Claim 20, **Roberts et al.** teaches a method of transmission in a multi-frame system, each frame of the multi-frame system being associated with a first type of control information (CL32, L44-51; CL35, L11-15; CL35, L59-64; CL37, L29-34; CL37, L37-62; Fig 13); there further being provided a second type of control information (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); the method comprising:

- a. partitioning the second type of control information into a number of sections; and
- b. forming a plurality of consecutive data frames for transmission, the number of consecutive data frames corresponding to the number of sections into which the code word is partitioned (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9; as shown in Tables 9 and 10 of CL99, the control bits are partitioned into 24 bits and each bit is sent in one frame; the bits are sent as the ninth bit, the bit pattern is updated each frame and repeated every 24 frame, CL30, L35-36); and
- c. transmitting with each frame of the multi-frame:

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- i. the first type of control information for the respective frame (CL35, L59-64; CL37, L37-62; Fig 13; CL39, L32-40; CL41, L55-66); and
- ii. a section of the partitioned second type of control information (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9).

Roberts et al. does not expressly teach control information comprising a code word. **Paneth et al.** teaches control information comprising a code word (CL16, L38-42). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the method of **Roberts et al.** with the method of **Paneth et al.** that included control information comprising a code word because code words would be used to determine synchronization between the mobile station and the base station and to exchange control and status information (CL16, L38-40).

6.2 As per Claim 21, **Roberts et al.** and **Paneth et al.** teach the method of Claim 20.

Roberts et al. also teaches that the second type of control information is for use on receipt of the multi-frame (CL30, L42-49; CL98, L62 to CL100, L21; Tables 9 and 10; as shown in Tables 9 and 10 of CL99, the control bits are partitioned into 24 bits and each bit is sent in one frame; the bits are sent as the ninth bit, the bit pattern is updated each frame and repeated every 24 frame, CL30, L35-36; it is inherent that the complete information, all the 24 control bits will be received at the end of 24 frames of the multi-frame; then the control information will be reconstructed, decoded and used).

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6.3 As per Claim 22, **Roberts et al.** and **Paneth et al.** teach the method of Claim 20.

Roberts et al. also teaches on receipt of the multi-frames reforming the second type of control information (CL98, L62 to CL100, L21; Tables 9 and 10; as shown in Tables 9 and 10 of CL99, the control bits are partitioned into 24 bits and each bit is sent in one frame; the bits are sent as the ninth bit, the bit pattern is updated each frame and repeated every 24 frame, CL30, L35-36; it is inherent that the complete information, all the 24 control bits will be received at the end of 24 frames of the multi-frame; then the control information will be reconstructed, decoded and used).

6.4 As per Claim 25, **Roberts et al.** and **Paneth et al.** teach the method of Claim 20.

Roberts et al. also teaches that the step of transmitting further comprises transmitting data with each frame (Fig. 13; Fig 9; CL36, L33-34; CL36, L43-46; CL38, L33-34).

6.5 As per Claim 29, **Roberts et al.** teaches a method of transmission in a multi-frame system, each frame of the multi-frame system being associated with a first type of control information (CL32, L44-51; CL35, L11-15; CL35, L59-64; CL37, L29-34; CL37, L37-62; Fig 13); there further being provided a second type of control information (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); wherein each frame of a plurality of consecutive frames in the multi-frame sequence is transmitted with the first type of control information for the respective frame (CL35, L59-64; CL37, L37-62; Fig 13; CL39, L32-40; CL41, L55-66); and a section of the partitioned second type of control information the number of frames of the plurality of consecutive frames in the multi-frame sequence corresponding to the number of

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sections into which the control information is partitioned, (CL30, L28-36; CL30, L42-49; CL98, L634 to CL100, L21; Fig 9); the method comprising:

receiving frames of the multi-frame and reforming the sections of the second type of control information into the second type of control information (CL98, L62 to CL100, L21).

Roberts et al. does not expressly teach control information comprising a code word; and reforming the control information into the code word. **Paneth et al.** teaches control information comprising a code word; and reforming the control information into the code word (CL16, L38-42).

6.6 As per Claim 32, **Roberts et al.** teaches a communication device for a multi-frame transmission communication system, each frame of the communication system being associated with a first type of control information (CL32, L44-51; CL35, L11-15; CL35, L59-64; CL37, L29-34; CL37, L37-62; Fig 13); there further being provided a second type of control information (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); the communication device comprising:

- a. partitioning means adapted to partition the second type of control information into a number of sections corresponding to a number of a plurality of consecutive of frames in the multi-frame (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); and
- b. transmitter means adapted to transmit with each of the plurality of frames of the multi-frame:

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- i. the first type of control information for the respective frame (CL35, L59-64; CL37, L37-62; Fig 13; CL39, L32-40; CL41, L55-66); and
- ii. a section of the second type of control information (CL30, L28-41; CL30, L42-49; CL98, L24 to CL100, L21; Fig 9; as shown in Tables 9 and 10 of CL99, the control bits are partitioned into 24 bits and each bit is sent in one frame; the bits are sent as the ninth bit, the bit pattern is updated each frame and repeated every 24 frame, CL30, L35-36).

Roberts et al. does not expressly teach control information comprising a code word.

Paneth et al. teaches control information comprising a code word (CL16, L38-42).

6.7 As per Claim 33, **Roberts et al.** teaches a communication device for a multi-frame transmission communication system, each frame of the communication system being associated with a first type of control information (CL32, L44-51; CL35, L11-15; CL35, L59-64; CL37, L29-34; CL37, L37-62; Fig 13); there further being provided a second type of control information (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); wherein each frame of a plurality of consecutive frames in the multi-frame transmission communication system is transmitted with the first type of control information for the respective frame (CL35, L59-64; CL37, L37-62; Fig 13; CL39, L32-40; CL41, L55-66); and a section of the partitioned second type of control information (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); the communication device comprising:

receiving means for receiving frames of the multi-frame and reforming means for reforming the sections of the second type of control information into the second type of control information (CL98, L62 to CL100, L21).

Roberts et al. does not expressly teach control information comprising a code word; and reforming the control information into the code word. **Paneth et al.** teaches control information comprising a code word; and reforming the control information into the code word (CL16, L38-42).

6.8 As per Claim 34, **Roberts et al.** teaches a multi-frame transmission communication system, each frame of the communication system being associated with a first type of control information (CL32, L44-51; CL35, L11-15; CL35, L59-64; CL37, L29-34; CL37, L37-62; Fig 13); there further being provided a second type of control information (CL30, L28-36; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); the communication system comprising:

a. a first device having a partitioning means adapted to partition the second type of control information into a number of sections (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); and

transmitter means adapted to transmit with each frame of the sequence of consecutive frames in the multi-frame, the first type of control information for the respective frame (CL35, L59-64; CL37, L37-62; Fig 13; CL39, L32-40; CL41, L55-66); and a section of the second type of control information wherein each section is placed in a separate frame in a sequence of

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consecutive frames, the number of sections corresponding to the number of frames in the sequence of frames (CL30, L28-416; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); and

a second device having a receiver means adapted to receive frames of a multi-frame transmission from the first device, and means for reforming the partitioned second type of control information (CL98, L62 to CL100, L21; as shown in Tables 9 and 10 of CL99, the control bits are partitioned into 24 bits and each bit is sent in one frame; the bits are sent as the ninth bit, the bit pattern is updated each frame and repeated every 24 frame, CL30, L35-36; it is inherent that the complete information, all the 24 control bits will be received at the end of 24 frames of the multi-frame; then the control information will be reconstructed, decoded and used).

Roberts et al. does not expressly teach control information comprising a code word; and reforming the control information into the code word. **Paneth et al.** teaches control information comprising a code word; and reforming the control information into the code word (CL16, L38-42).

7. Claims 23, 24, 31, 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Roberts et al.** (US Patent 6,418,558) in view of **Paneth et al.** (US Patent 6,014,374), and further in view of **Le Strat et al.** (US Patent 6,134,220).

7.1 As per Claim 23, **Roberts et al.** and **Paneth et al.** teach the method of Claim 20. **Roberts et al.** teaches the transmission is in a downlink (downstream) of a communication system, the first type of control information representing synchronization information and

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various parameters such as path delay adjustment, initialization, activation, dynamic allocation messages, modem control messages etc applied to the downlink (CL35, L59-64; CL37, L37-62; Fig 13; CL39, L32-40; CL41, L55-66); and the second type of control information representing multi-frame timing, out-of-band signaling and status and control messages associated with DS0 between Host digital terminal and the Integrated service unit (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9). **Roberts et al.** and **Paneth et al.** do not expressly teach that the transmission is in a downlink of a communication system, the first type of control information representing a coding mode applied to the downlink and the second type of control information representing a coding mode to be applied in an uplink of the communication system. **Le Strat et al.** teaches that the transmission is in a downlink of a communication system, the first type of control information representing a coding mode applied to the downlink and the second type of control information representing a coding mode to be applied in an uplink of the communication system (Fig. 9, Item 98; CL7, L40-42). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the method of **Roberts et al.** and **Paneth et al.** with the method of **Le Strat et al.** so that the transmission is in a downlink of a communication system, the first type of control information representing a coding mode applied to the downlink and the second type of control information representing a coding mode to be applied in an uplink of the communication system because the fixed part (the base transceiver station) would modify the coding mode in each transmission direction based on the transmission quality in the mobile station to the base transceiver direction and transmission quality in the base transceiver to mobile station direction and would transmit to the mobile station information on the coding and transmission modes (CL7, L30-42).

7.2 As per Claim 24, **Roberts et al.** and **Paneth et al.** teach the method of Claim 20.

Roberts et al. teaches the transmission is in a downlink (downstream) of a communication system, the first type of control information representing synchronization information and various parameters such as path delay adjustment, initialization, activation, dynamic allocation messages, modem control messages etc applied to the downlink (CL35, L59-64; CL37, L37-62; Fig 13; CL39, L32-40; CL41, L55-66); and the second type of control information representing multi-frame timing, out-of-band signaling and status and control messages associated with DS0 between Host digital terminal and the Integrated service unit (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9). **Roberts et al.** and **Paneth et al.** do not expressly teach that the transmission is in an uplink of a communication system, the first type of control information representing a coding mode applied in the uplink. **Le Strat et al.** teaches that the transmission is in an uplink of a communication system, the first type of control information representing a coding mode applied in the uplink (Fig. 9; CL7, L40-42). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the method of **Roberts et al.** and **Paneth et al.** with the method of **Le Strat et al.** so that the transmission was in an uplink of a communication system, the first type of control information representing a coding mode applied in the uplink because the fixed part (the base transceiver station) would modify the coding mode in each transmission direction based on the transmission quality in the mobile station to the base transceiver direction and transmission quality in the base transceiver to mobile station direction and would transmit to the mobile station information on the coding and transmission modes (CL7, L30-42).

Roberts et al. and **Paneth et al.** do not teach that the transmission is in an uplink of a communication system, the second type of control information representing a downlink quality measured in the downlink. **Le Strat et al.** teaches that the transmission is in an uplink of a communication system, the second type of control information representing a downlink quality measured in the downlink (CL7, L44-48 and CL14, L60-63). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the method of **Roberts et al.** and **Paneth et al.** with the method of **Le Strat et al.** so the transmission is in an uplink of a communication system, the second type of control information representing a downlink quality measured in the downlink because the mobile station would measure the transmission quality in the base station to the mobile station direction and would transmit this information to the base station (CL7, L44-48); and the base station would receive this quality information and would use it to modify the coding mode in each direction (CL7, L33-38).

7.3 As per Claim 31, **Roberts et al.** and **Paneth et al.** teach the method of Claim 29, which includes control information comprising a code word.

Roberts et al. and **Paneth et al.** do not expressly teach encoding frames for transmission depending on the reformed code word. **Le Strat et al.** teaches encoding frames for transmission depending on the received control information (CL7, L30-39). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the method of **Roberts et al.** and **Paneth et al.** with the method of **Le Strat et al.** that included encoding frames for transmission depending on the received control information because the fixed part (the base transceiver station) would modify the coding mode in each transmission direction

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based on the transmission quality in the mobile station to the base transceiver direction and transmission quality in the base transceiver to mobile station direction and would transmit to the mobile station information on the coding and transmission modes (CL7, L30-42); and the coding mode selected by the base station and transmitted to the mobile station would depend on the quality of transmission required and the resources required (CL4, L41-50).

7.4 As per Claim 37, **Roberts et al.** and **Paneth et al.** teach the multi-frame transmission communication system of Claim 34. **Roberts et al.** and **Paneth et al.** do not expressly teach that the first device is a fixed part of the communication system and the second device is a mobile part of the communication system and there is an uplink established from the mobile part of the communication system to the fixed part of the communication system. **Le Strat et al.** teaches that the first device is a fixed part of the communication system and the second device is a mobile part of the communication system and there is an uplink established from the mobile part of the communication system to the fixed part of the communication system (CL3, L61-63). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the system of **Roberts et al.** and **Paneth et al.** with the system of **Le Strat et al.** that included the first device being a fixed part of the communication system and the second device being a mobile part of the communication system and there was an uplink established from the mobile part of the communication system to the fixed part of the communication system because that would be how the uplink was identified in the GSM system (CL3, L61-63).

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7.5 As per Claim 38, **Roberts et al.** and **Paneth et al.** teach the multi-frame transmission communication system of Claim 34. **Roberts et al.** and **Paneth et al.** do not expressly teach that the first device is a fixed part of the communication system and the second device is a mobile part of the communication system and there is downlink established from the fixed part of the communication system to the mobile part of the communication system. **Le Strat et al.** teaches that the first device is a fixed part of the communication system and the second device is a mobile part of the communication system and there is downlink established from the fixed part of the communication system to the mobile part of the communication system (CL3, L61-65). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the system of **Roberts et al.** and **Paneth et al.** with the system of **Le Strat et al.** that included the first device is a fixed part of the communication system and the second device is a mobile part of the communication system and there is downlink established from the fixed part of the communication system to the mobile part of the communication system because that would be how the downlink was identified in the GSM system (CL3, L61-65).

8. Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Roberts et al.** (US Patent 6,418,558) in view of **Paneth et al.** (US Patent 6,014,374), and further in view of **Dahlin** (US Patent 5,199,031).

8.1 As per Claim 26, **Roberts et al.** and **Paneth et al.** teach the method of Claim 25. **Roberts et al.** teaches modifying the DS0 by appending a ninth bit to carry multi-frame timing, signaling information and control/status information (CL30, L28-41; CL30, L42-49; CL98, L62

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to CL100, L21; Fig 9). **Roberts et al.** and **Paneth et al.** do not teach that the step of transmitting comprises channel encoding the data and the section of the second type of control information.

Dahlin teaches that the step of transmitting comprises channel encoding the data and the section of the second type of control information (Fig. 2, Items 102 and 104; CL4, L14-35). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the method of **Roberts et al.** and **Paneth et al.** with the method of **Dahlin** so that the step of transmitting comprised channel encoding the data and the section of the second type of control information because that would allow protecting important data bits in the speech code and providing a cyclic redundancy check (CL4, L31-35); and manipulating the incoming data to carry out error detection and correction (CL4, L25-29).

8.2 As per Claim 27, **Roberts et al.**, **Paneth et al.** and **Dahlin** teach the method of Claim 26.

Roberts et al. teaches transmitting with each frame of the multi-frame the first type of control information for the respective frame (CL35, L59-64; CL37, L37-62; Fig 13; CL39, L32-40; CL41, L55-66). **Roberts et al.** and **Paneth et al.** do not teach channel coding the first type of control information. **Dahlin** teaches channel coding the first type of control information (Fig. 2, Items 102 and 104; CL4, L14-35).

8.3 As per Claim 28, **Roberts et al.**, **Paneth et al.** and **Dahlin** teach the method of Claim 27.

Roberts et al. teaches frame formatting and interleaving the channel coded first type of control information, data and section of the second type of control information (Fig 13; CL38, L33-34; CL41, L55-66).

9. Claims 30 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Roberts et al.** (US Patent 6,418,558) in view of **Paneth et al.** (US Patent 6,014,374), and further in view of **Wan** (US Patent 6385,460).

9.1 As per Claim 30, **Roberts et al.** and **Paneth et al.** teach the method of Claim 29. **Roberts et al.** and **Paneth et al.** do not expressly teach the step of decoding the received frames in accordance with a mode code derived from the first type of control information for each frame. **Wan** teaches the step of decoding the received frames in accordance with a mode code derived from the first type of control information for each frame (CL6, L21-23). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the method of **Roberts et al.** and **Paneth et al.** with the method of **Wan** that included the step of decoding the received frames in accordance with a mode code derived from the first type of control information for each frame because the mobile unit would be provided with the coding mode and key needed to decode and demodulate the information coming from the base station (CL6, L21-23).

9.2 As per Claim 35, **Roberts et al.** and **Paneth et al.** teach the multi-frame transmission communication system of Claim 34. **Roberts et al.** and **Paneth et al.** do not expressly teach that the second device is adapted to decode the frames of the multi-frame transmission in dependence on the first type of control information contained in a received frame. **Wan** teaches that the

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second device is adapted to decode the frames of the multi-frame transmission in dependence on the first type of control information contained in a received frame (CL6, L21-23

10. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Roberts et al.** (US Patent 6,418,558) in view of **Paneth et al.** (US Patent 6,014,374) and **Wan** (US Patent 6385,460), and further in view of **Le Strat et al.** (US Patent 6,134,220).

10.1 As per Claim 36, **Roberts et al.**, **Paneth et al.** and **Wan** teach the multi-frame transmission communication system of Claim 35, including reformed code word.

Roberts et al., **Paneth et al.** and **Wan** do not expressly teach that the second device further comprises encoding means for encoding data for transmission using a mode code based on the reformed control information and transmission means for transmitting the encoded data to the first device. **Le Strat et al.** teaches the second device further comprises encoding means for encoding data for transmission using a mode code based on the reformed control information and transmission means for transmitting the encoded data to the first device (CL7, L30-39). It would have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the communication system of **Roberts et al.**, **Paneth et al.** and **Wan et al.** with the communication system of **Le Strat et al.** that included the second device further comprises encoding means for encoding data for transmission using a mode code based on the reformed control information and transmission means for transmitting the encoded data to the first device because the fixed part (the base transceiver station) would modify the coding mode in each transmission direction based on the transmission quality in the mobile station to the base

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transceiver direction and transmission quality in the base transceiver to mobile station direction and would transmit to the mobile station information on the coding and transmission modes (CL7, L30-42); and the coding mode selected by the base station and transmitted to the mobile station would depend on the quality of transmission required and the resources required (CL4, L41-50).

Response to Arguments

11. Applicant's arguments filed on October 5, 2005 have been fully considered. The arguments with respect to claim rejections under 35 USC 112 First paragraph and 35 USC 103 (a) made on October 5, 2005 are not persuasive.

12. As per the applicants' arguments, the applicants' attention is requested to the corresponding claim rejections. In addition, the following explanation is provided to further explain the examiner's position.

12.1 As per the applicants' argument that "the Examiner objected to the recitation in claim 20 that "the second type of control information is partitioned into a number of sections corresponding to the number of frames in the multi-frame"; the Examiner further objected to the recitation of "transmitting with each frame in the multi-frame" in claim 20; ... Applicants submit that the specification, as a whole, supports a claim in which each frame of the multi-frame contains a section of the partitioned information; ... therefore, each of the frames in the

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multi-frame sequence described in FIG. 2 contain one bit of a partitioned multi-bit mode command;... Applicants have amended claim 20 to state that, in a multi-frame system, a plurality of consecutive frames for transmission are formed and the control information is partitioned between the consecutive data frames; ... This amendment clearly eliminates any requirement for correspondence between a number of sections into which the control information is partitioned and the number of frames in the multi-frame sequence”, the Examiner has withdrawn rejection of claim 20 and its dependent claims under 35 USC 112 First paragraph in response to claim amendments.

12.2 As per the applicants' argument that “the Examiner also rejected claim 29; the Examiner contends that the specification does not support claims that recite partitioning the second type of control information among each frame of the multi-frame sequence; the Applicants submit that the Examiner's reliance on this one sentence in the specification is inappropriate; throughout the specification, there is reference to multi-frame signaling and multi-frame bits; every reference to multi-frame bits is in the context of partitioned second type of control information; the definition of a multi-frame bit is a second type of control information partitioned and distributed among multiple frames in the multi-frame;... the Applicants again state that the Examiner is incorrect in concluding that there is no support in the specification for partitioning control information among each frame of a multi-frame sequence; however, again in order to expedite the prosecution of this case, Applicants have amended claim 29 to state that the multi-frame system has a plurality of consecutive frames in a multi-frame sequence and that the second type of control information is partitioned and that the number of the plurality of consecutive frames

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corresponds to the number of sections of the partitioned second type of control information; there is more than ample support in the specification for this amended claim 29; the Examiner is referred specifically to FIG. 2 which illustrates that partitioned second type of control information (being gap 3 of frames 0-2) is partitioned into a three bit sequence 0, 1, 0 and that three bit sequence is distributed one bit in each of frames 0, 1 and 2", the Examiner has withdrawn rejection of claim 29 and its dependent claims under 35 USC 112 First paragraph in response to claim amendments.

12.3 As per the applicants' argument that "the Examiner rejected claim 32 under 35 U.S.C. § 112 for the same reasons stated above for claims 20 and 29, that the specification fails to support the limitation "partitioning means adapted to partition the second type of control information into a number of sections corresponding to the number of frames in the multi-frame"; there is ample support in the specification for such a limitation; Applicants submit that it is clear that the multi-frame sequence is defined by the number of frames into which the second type of control information is partitioned in place; how else can the terms multi-frame signaling, and multi-frame signaling bits make sense? Furthermore, FIG. 2 clearly illustrates nine frames each frame containing one bit of a partitioned multi-bit second type of control information; FIG. 2 illustrates several sequences of such partitioned control information; however, none of the claims of the present invention require that the partitioned bits be partitioned from one sequence; the claims do not preclude the partitioned bits being from more than one code word; however, in order to expedite the prosecution of this application, Applicants have amended claim 32; Claim 32 is amended to recite that the second type of control information is partitioned into a plurality

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of consecutive frames in the multi-frame sequence, the number of consecutive frames corresponding to the number of sections of partitioned information”, the Examiner takes the position that the amendment to claim 32 does not have support in the specification.

Claim 32 states in part, “the communication device comprising:

- a. partitioning means adapted to partition the second type of control information into a number of sections corresponding to a number of a plurality of consecutive of frames in the multi-frame;
- b. transmitter means adapted to transmit with each of the plurality of frames of the multi-frame:
 - i. the first type of control information for the respective frame; and
 - ii. a section of the second type of control information”.

This is in contrast to what the specification describes in Page 4, Lines 23-30 and it is new information introduced by the Applicant in the amendment of September 28, 2004. The specification states that “the speech coded data from step 101 is channel coded together with at least one additional bit derived from a multi-frame signaling step 102.... The additional bit from step 102 is a part of the three bit information used for coding additional signaling information. ... In this example, it takes three frames within a multi-frame of six frames, as e.g. defined and used according to the GSM standard, to transmit the coding mode information as within each frame only one of three bits is transmitted”.

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Therefore, “partitioning means adapted to partition the second type of control information *into a number of sections corresponding to a number of a plurality of consecutive of frames in the multi-frame* and transmitter means adapted to transmit with *each of the plurality of frames of the multi-frame* a section of the second type of control information” is not supported by the specification.

12.4 As per the applicants’ argument that “the Examiner rejected claim 33 under 35 U.S.C. § 112; ... the basis for the Examiner's rejection is that the specification failed to adequately support the limitation; ... for the reasons previously stated, Applicants submit it is clear that the specification supports a claim in which each frame of the multi-frame sequence is transmitted with a section of the partitioned second type of control information; however, Claim 33 is amended to recite that the control information is partitioned into sections and each section is placed in one of a plurality of consecutive frames of the multi-frame sequence”, the Examiner takes the position that the amendment to claim 33 does not have support in the specification.

Claim 33 states in part, “wherein *each frame of a plurality of consecutive frames in the multi-frame transmission communication system is transmitted with* the first type of control information for the respective frame and *a section of a partitioned second type of control information*”.

This “each frame is transmitted with a section of a partitioned second type of control information” is not supported by the specification, as described in Paragraph 12.3 above.

12.5 As per the applicants' argument that "The Examiner rejected claim 34 under 35 U.S.C. § 112; the basis for the Examiner's rejection is that the specification fails to support a claim that recites that the number of sections into which the second type of control information is partitioned corresponds to the number of frames in a multi-frame sequence; for the reasons stated above, the Applicants disagree with the Examiner's conclusion; however, in order to expedite the prosecution of this application, Applicants have amended claim 34 to recite that the multi-frame sequence contains a plurality of consecutive frames, and that the plurality of consecutive frames corresponds in number to the number of sections in which the second type of control information is partitioned", the Examiner takes the position that the amendment to claim 34 does not have support in the specification.

Claim 34 states in part, "the communication device comprising:

a first device having a partitioning means adapted to partition the code word of the second type of control information into a number of sections, and transmitter means adapted to transmit with each frame of the sequence of consecutive frames in the multi-frame, the first type of control information for the respective frame and a section of the second type of control information wherein each section is placed in a separate frame in a sequence of consecutive frames, the number of sections corresponding to the number of frames in the sequence of frames".

The "transmitter means adapted to transmit *with each frame of the sequence of consecutive frames in the multi-frame*, the first type of control information for the respective

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frame and *a section of the second type of control information* wherein each section is placed in a separate frame in a sequence of consecutive frames, *the number of sections corresponding to the number of frames in the sequence of frames*” is not supported by the specification, as described in Paragraph 12.3 above.

12.6 As per the applicants’ argument that “Roberts et al. does not disclose or suggest a method or apparatus in which control information of the second type is partitioned among consecutive frames and transmitted, wherein the second type of control information is a code word that is reassembled and used upon receipt”, the Examiner has used **Roberts et al.** with **Paneth et al.** which teach the combination.

Roberts et al. teaches a method of transmission in a multi-frame system, there being provided a second type of control information (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9); the method comprising partitioning the second type of control information into a number of sections; forming a plurality of consecutive data frames for transmission, the number of consecutive data frames corresponding to the number of sections into which the code word is partitioned (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9; as shown in Tables 9 and 10 of CL99, the control bits are partitioned into 24 bits and each bit is sent in one frame; the bits are sent as the ninth bit, the bit pattern is updated each frame and repeated every 24 frame, CL30, L35-36); and transmitting with each frame of the multi-frame a section of the partitioned second type of control information (CL30, L28-41; CL30, L42-49; CL98, L62 to CL100, L21; Fig 9). It is inherent that the complete information, all the 24 control bits will be

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received at the end of 24 frames of the multi-frame; then the control information will be reconstructed, decoded and used.

Roberts et al. does not expressly teach control information comprising a code word.

Paneth et al. teaches control information comprising a code word (CL16, L38-42), because code words are used to determine synchronization between the mobile station and the base station and to exchange control and status information (CL16, L38-40).

12.7 As per the applicants' argument that "that Roberts et al. does not contemplate partitioning a code word, transmitting that partitioned code word by distributing the code word among consecutive frames to which it does not relate along with other signaling information and most specifically reforming the code word; Roberts et al. at most describes partitioning signaling information using a ninth bit signaling strategy", the Examiner directs applicants attention to Paragraph 12.1 above. The **Roberts et al.** and **Paneth et al.** method covers partitioning and transmitting of all types of control signal and is not restricted to only code words which do not relate to the frames in which they are transmitted.

12.8 As per the applicants' argument that "while Balachandran et al. may describe partitioning signaling information among multiple frames, Balachandran et al. clearly does not disclose or suggest partitioning a code word into sections and transmitting each section in a different frame of a plurality of consecutive frames; Balachandran et al. does not disclose or suggest partitioning a code word and transmitting the partitioned code word in a consecutive sequence of frames; the

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FACCH information in Balachandran et al. is not transmitted in a series of consecutive frames; the placement of the FACCH information in the frames depends upon the speech transmission requirements and the FACCH transmission requirements”, the Examiner has used **Roberts et al.** with **Paneth et al.** in this Office Action, as shown in Paragraph 12.1 and 6.1 above.

12.9 As per the applicants’ argument that “Since Le Strat et al. clearly does not disclose or suggest partitioning the second type of control information, i.e., the control information that is not related to the frames in which it is transmitted, the Examiner relies on Balachandran et al. to support his argument”, the Examiner takes the position that **Roberts et al.** teaches partitioning the second type of control information, as shown in Paragraph 12.1 and 6.1 above. The **Roberts et al.** and **Paneth et al.** method covers partitioning and transmitting of all types of control signal and is not restricted to only code words which do not relate to the frames in which they are transmitted.

12.10 As per the applicants’ argument that “while Roberts et al. contemplates using nine bits signaling in both the upstream and downstream directions, there is no concept in Roberts et al. of transmitting partitioned information in a downlink and using that information for a coding mode in the uplink; in fact, in Roberts et al. there is no suggestion of partitioning the information in the downlink to be used for any purpose in the uplink”, the Examiner takes the position that **Roberts et al.** teaches partitioning the second type of control information and transmitting it to the downlink; and reassembling the partitioned data and using it on receipt of complete information, as described in Paragraph 12.1 above. How the reformed information is used will depend on the

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type of the control information and its purpose. There is no restriction on how the control information should be used.

12.11 As per the applicants' argument that "Wan et al. does not disclose or suggest employing different transmission strategies for control information associated with the frame and control information not specifically associated with a frame in which it is transmitted", the Examiner has used Wan only to show that the received data is decoded using the coding mode received by the mobile station or fixed station with the data.

12.12 As per the applicants' argument that "while the Dahlin et al. reference describes channel coding both FACCH information and SACCH information, Dahlin et al. does not disclose or suggest a frame based transmission between a first link and a second link of a communication system, wherein a frame contains control information relating to the frame, and a portion of partitioned control information of a second type; that second type of information is not related to the frame in which it is transmitted; as previously noted, Roberts et al. does not disclose or suggest this transmission strategy, nor does Dahlin et al.", the Examiner takes the position that **Roberts et al.** teaches partitioning the second type of control information, as shown in Paragraph 12.1 and 6.1 above. The **Roberts et al.** and **Paneth et al.** method covers partitioning and transmitting of all types of control signal and is not restricted to only code words which do not relate to the frames in which they are transmitted.

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12.13 As per the applicants' argument that "Roberts et al. does not disclose or suggest using a first type of control information that is transmitted in a link of a communication system to decode a second type of control information that has been partitioned and distributed among consecutive frames transmitted from the first link to the second link of the communication system", the Examiner has used **Wan** which teaches using a first type of control information that is transmitted in a link of a communication system to decode a second type of control information. Applicants' attention is directed to Paragraph 9.1 above.

12.14 As per the applicants' argument that "claim 31 has been amended to recite that "encoding frames for transmission depends on the reformed code word"; Roberts et al. does not expressly teach such a step; the Examiner contends that it's inherent in Balachandran et al. that messages encoded at the transmission side should be decoded on the receiver side; it is not inherent from Balachandran et al. that control information, partitioned into consecutive frames to which the information does not relate, are used to encode frames for transmission; therefore, the Examiner's inherency argument with regard to the disclosure in Balachandran et al. must fail. Balachandran's disclosure of partitioning and interleaving FACCH information for transmission aside, Balachandran et al. clearly does not disclose or suggest using partitioned control information transmitted in one link of a communication system for encoding information to be transmitted in a second link of the communication system", the Examiner has used **Roberts et al.** which teaches partitioning the second type of control information, as shown in Paragraph 12.1 and 6.1 above with **Le Strat et al.** which teaches using the control information transmitted in one link of

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a communication system for encoding information to be transmitted in a second link of the communication system. Applicants' attention is directed to Paragraph 10.1 above.

Conclusion

ACTION IS FINAL

13. Applicant's amendments necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is

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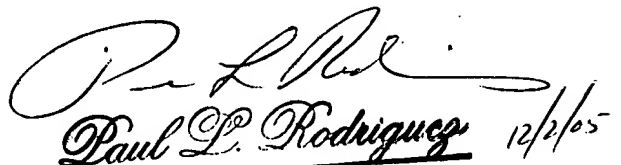
571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard, can be reached on 571-272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K. Thangavelu
Art Unit 2123
November 25, 2005


Paul L. Rodriguez 12/2/05
Primary Examiner
Art Unit 2125